

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 30A-92 764		FOR FURTHER ACTION		See Form PCT/IPEA/416					
International application No. Inter		International filing da	ite (day/month/year)	Priority date (day/month/year)					
PCT/EP2004/000929 02.02.200		02.02.200	4	29.04.2003					
International Patent Class	ification (IPC) or nat	ional classification and	IPC						
Applicant									
COMPACT DYNAMICS GMBH									
	1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.								
	consists of a total of		sheets, includi	ng this cover sheet.					
i		NNEXES, comprising:							
			_						
a. 🖂 (sen	••	to the International B		sheets, as follows:					
	sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).								
	•	sede earlier sheets, but	which this Authority co	nsiders contain an amendment that goes beyond					
	the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental								
. 🗂 .	Box.								
b (sen	b (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s))								
	, containing a sequence listing and/or tables								
related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).									
4. This report con	tains indications relat	ing to the following ite	ns:						
Box No	o. I Basis of the	e report							
Box No	. Π Priority								
Box No	o. III Non-establ	ishment of opinion witl	regard to novelty, inver	ntive step and industrial applicability					
Box No	. IV Lack of un	ity of invention							
Box No	Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement								
Box No	Box No. VI Certain documents cited								
Box No	Box No. VII Certain defects in the international application								
Box No. VIII Certain observations on the international application									
Date of submission of the demand			Date of completion of t	his report					
			_						
Name and mailing address of the IPEA/EP			Authorized officer						
Paraticity No.		l							

(") "

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2004/000929

Вох	No. I	Basis of the report							
1.		n regard to the language, this report is based on the internation cated under this item.	nal application in the language in	which it was filed, unless otherwise					
	This report is based on translations from the original language into the following language which is the language of a translation furnished for the purposes of:								
		international search (Rule 12.3 and 23.1(b))							
		publication of the international application (Rule 12.4))						
		international preliminary examination (Rule 55.2 and/	for 55.3)						
2.	recei	n regard to the elements of the international application, this iving Office in response to an invitation under Article 14 an report): the international application as originally filed/furnished the description:							
		pages _ 1-13		as originally filed/furnished					
		pages*	received by this Authority on						
		pages*	received by this Authority on						
	M	the claims:							
		nos.		as originally filed/furnished					
		nos.*	as amended (togethe	r with any statement) under Article 19 16.03.2005 with the					
		nos.* 1-18	received by this Authority on	letter of 16.03.2005					
		nos.*	received by this Authority on						
	\boxtimes	the drawings:							
		sheets 1/6-6/6		as originally filed/furnished					
		sheets*	received by this Authority on						
		sheets*	received by this Authority on						
		a sequence listing and/or any related table(s) see Supplem	ental Box Relating to Sequence L	isting.					
3.		The amendments have resulted in the cancellation of:							
		the description, pages							
		the claims, nos.	-						
		any table(s) related to sequence listing (specify):							
4.	Ш	This report has been established as if (some of) the amend they have been considered to go beyond the disclosure as fil							
		the description, pages							
		the claims, nos.							
		the drawings, sheets/figs							
		the sequence listing (specify):							
*	If ite	em 4 applies, some or all of those sheets may be marked "sup							

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				101/112001/0003	2)
Box			rticle 35(2) with regard to novelty, inventive s pporting such statement	tep or industrial applicability;	
1.	Statement				_
	Novelty (N)	Claims	1-18		YES
		Claims			_ NO
	Inventive step (IS)	Claims	1-18		YES
		Claims			_ NO
	Industrial applicability (IA)	Claims	1-18		_ YES
		Claims			_ NO
2.	Citations and explanations (Rule 7	70.7)	, "		
	1 Document	IIS503	5360 (D2), which is re	egarded as the	

 Document US5035360 (D2), which is regarded as the closest prior art, discloses (see figures 1 and 4b)

> a fuel injection valve for fuel injection systems in internal combustion engines, for the direct injection of fuel into a combustion chamber of an internal combustion engine, comprising:

- a fuel inlet (92),
- an electrically controllable actuating device which co-operates with a valve arrangement (48) in order to allow fuel to flow through a fuel outlet (38) into the combustion chamber, the actuating device comprising an electrically powered magnetic coil assembly (106), a substantially soft magnetic yoke assembly (82) interacting therewith and a substantially soft magnetic armature assembly (62) interacting with the yoke assembly, the magnetic yoke assembly (82) comprising a plurality of pole segments (82, 86), which are at least partly enveloped by

electromagnetic coil assemblies (106),

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- which are configured to divert opposing electric currents on opposite sides of the pole segments,
- are substantially polygonal in shape, are arranged adjacent one another with spaces therebetween for accommodating the electromagnetic coil assemblies and are arranged parallel to one another.

The subject matter of claim 1 differs therefrom in that the pole segments are not enveloped by an electromagnetic coil assembly in a meander-like manner.

- The present invention can therefore be considered to address the problem of producing a simpler, cheaper and more compact injection valve.
- features specified under point 1. These make it possible, in an efficient production method, to arrange between two layers of sheet metal containing soft iron a current conducting strip for forming the magnetic coil assembly and a sheet metal strip containing soft iron for forming a stator-yoke back. The current-conducting strip and the sheet metal strip containing soft iron thus adjoin one another on at least one longitudinal edge of each in an electrically insulated manner.

Document US4156506 (D4) discloses an injection

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

valve with a single meandering pole segment (see figure 5). The arrangement therein solves problems different from that solved by the present application and is geometrically too far removed for it to be possible to combine the two documents mentioned.

- 4. The subject matter of dependent claims 2-18 is considered novel and inventive, since those claims contain further embodiments of the injection valve according to claim 1.
- 5. Claims 1-18 thus satisfy the criterion in PCT Article 33(1).